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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,954	08/31/2001	Paul Aurelio Martinez	42252-1012	2029

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EXAMINER
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DINH, TUAN T

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/943,954

Applicant(s)

MARTINEZ, PAUL AURELIO

Examiner

Tuan T Dinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 20-24 is/are pending in the application.  
4a) Of the above claim(s) 20,21,23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-10 and 22 is/are rejected.
- 7) ☐ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Applicant is canceled claims 11-19 and added new claims 20-24, claims 1-10, and 20-24 are pending now.

Applicant's election without traverse of Group I (claims 1-12) in Paper No. 6 is acknowledged.

Claims 11-19 are canceled without prejudice.

Applicant's election of Specie I (figure 1, claims 1-10) in Paper No. 6 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 20-21, and 23-24 read on Species II-III, and claim 22 reads on Specie I; therefore, claims 20-21, and 23-24 are withdrawn from further consideration as being drawn to non-elected subject matter.

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "cross-hatching of the drawings (figures 1-6) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The cross-hatching of the drawings do not show the materials made of a printed circuit board (PCB), a carrier, or a solder ball. Examiner suggests to applicant to take a look in MPEP 608.02.

Figure 4A should be designated by a legend such as --**Prior Art**-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claim 10 is objected to because of the following informalities:

Claim 10, line 5, "a printed circuit board" should be --the printed circuit board--.

Claim 10, line 11, "the carrier board" should be --the carrier--.

Appropriate correction is required.

### ***Double Patenting***

3. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

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A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-10 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-10 of copending Application No. 10/420,269. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claims 1-10 of the instant application are identical with claims 1-10 of the application No. 10/420,269.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 7-8, 10, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizukoshi (U. S. Patent 5,578,525).

As to claim 1, Mizukoshi discloses a system for reducing apparent height of a board system as shown in figure 4, comprising

a carrier (package substrate 22, column 6, lines 44-45);

a component (semiconductor chip 21, column 6, line 44) mounted on a first side (25, column 6, line 59) of the carrier;

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a printed circuit board (jumper substrate or multiplayer PCB 23, column 6, line 45, column 7, lines 19-20) with a hole (36, column 7, lines 26-30), the hole being structured to accommodate the component (21); and

a solder material (37; 38, column 7, lines 47-49) soldering the carrier (22) to the printed circuit board (PCB 23) and providing a structural bond between the carrier and the printed circuit board, at least one portion of the solder material providing an electrical coupling between the carrier and the printed circuit board,

wherein at least one portion of the component (21) is maintained in the hole (26) after the carrier is soldered to the printed circuit board.

As to claims 7-8, Mizukoshi discloses the system in figure 4 wherein the solder material (37; 38) provides the only structure bond or electrical coupling between the carrier and the printed circuit board.

As to claim 22, Mizukoshi discloses the system in figures 4-11 wherein the hole (36) extends through the printed circuit board (23).

As to claim 10, Mizukoshi discloses a system in figure 4, comprising:

a printed circuit board (23);

a packaged integrated chip (21);

a carrier (22);

the printed circuit board (23) with a hole (36) through which the packaged integrated chip fits; and

a solder material (37; 38),

wherein the packaged integrated chip (21) is coupled electrically to printed circuit board (23) via the carrier (22) and the at least one portion of the solder material, all as explained with respect to claim 1.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizukoshi (U. S. Patent 5,578,525) in view of APA (prior art-figure 4A).

As to claim 9, Mizukoshi discloses a device as shown in figure 4, comprising  
a component (21);

a carrier board (a multiplayer PCB 22);

a printed circuit board (jumper substrate or multiplayer PCB 23, column 6, line 45, column 7, lines 19-20) with a hole (36, column 7, lines 26-30) through which the component fits; and

a solder material (37; 38, column 7, lines 48-49),

wherein the component (21) is coupled electrically to the PCB (23) via the carrier board (22) and the at least one portion of the solder material, as explained with respect to claim 1.

Mizukoshi does not disclose the component, which is a duplexer. However, APA shows in figure 4A that a duplexer (170) mounted on a PCB (110), page 8, lines 4-5.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a duplexer in the device of Mizukoshi, as taught by APA, for the purpose of providing receiving and transmitting signals for the communication system.

8. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizukoshi (U. S. patent 5,578,525) in view of Sugahara (U. S. Patent 6,037,656).

As to claims 2-3, Mizukoshi discloses the system in figure 4 further comprising a solder bump material (solder bump 27, column 6, lines 55-56) disposed between the component (21) and the first side (25) of the carrier (22), and the solder material (27) is adapted to provide a bond between the component (21) and the carrier (22) and is adapted to provide an electrical coupling between the component and the carrier.

Mizukoshi does not disclose the solder bump material, which is a paste material. However, Sugahara shows a semiconductor device in figure 4A having a conductive paste (11p, column 4, line 38) disposed between a component (10) and a carrier (board 11a), the conductive paste (11p) is adapted to provide a bond and electrically coupling between the component and the carrier.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a paste material in the system of Mizukoshi, as taught by Sugahara, for the purpose of providing a proper alignment and surface-to-surface



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joining to form a grid or checkered pattern of the component electrically connect to the board.

As to claim 4, Mizukoshi discloses the system in figure 4 wherein the carrier (22) includes a printed circuit (electrode patterns 26, column 6, line 54) printed on at least the first side (25) of the carrier (22), and wherein the solder material (27) is adapted to provide an electrical coupling between the printed circuit of the carrier and the component.

Mizukoshi does not disclose the solder material, which is a paste material. However, Sugahara shows a semiconductor device in figure 4A having a conductive paste (11p, column 4, line 38) electrically coupling between a printed circuit (11g-see figures 2, 3, and 4A) of the carrier (11a) and the component (10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a paste material in the system of Mizukoshi, as taught by Sugahara, for the purpose of providing a proper alignment of the component electrically contact to the board.

As to claim 5, Mizukoshi discloses the system in figure 4 wherein the component (21) is electrically coupled to the printed circuit board via the solder material (27), the printed circuit of the carrier and the solder material.

Mizukoshi does not disclose the solder material, which is a paste material. However, Sugahara shows a semiconductor device in figure 4A having a conductive paste (11p, column 4, line 38) electrically coupling a printed circuit (11g-see figures 2, 3, and 4A) of the carrier (11a).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a paste material in the system of Mizukoshi, as taught by Sugahara, for the purpose of providing a proper alignment of the component electrically contact to the board.

***Allowable Subject Matter***

9. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Urushima, Bhatt et al., Jones et al., and Miles et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 703-308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0658.

A handwritten signature in black ink, appearing to read 'Tuan Dinh', with a long, sweeping horizontal stroke extending to the right.

Tuan Dinh  
December 08, 2003.